

THE DISCOVERY OF ORGANIC REMAINS IN METEORIC STONES

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The great problem, whether or not other celestial bodies besides our own planet are or in past ages have been inhabited by animate beings, must be a subject of the deepest interest to every thinking being. This question has for some time past been answered in the affirmative with great probability. The complete analogy of physical conditions which has been proved to exist in some other planets of our solar system, and which without doubt must also occur in innumerable planets of other solar systems, allowed the very probable deduction that not only on our own earth a higher organic process of evolution has taken place. Still, this conclusion by analogy had hitherto remained a simple, unproved hypothesis, although supported by good evidence.

But now at last it seems that we have obtained a direct answer to this question, and that we are able to see with our own eyes the veritable remains of animate beings from another celestial body.

It has been conclusively demonstrated that the meteoric stones which from time to time drop down on the earth have at no time formed a part of this planet, and it is now generally conceded that they are the remains of other celestial bodies – probably those of a destroyed planet.

In such meteoric stones, and especially in the class called chondrites, on account of the peculiar spherical inclusions found in them, the eminent German geologist, Dr. Hahn, has recently discovered an entire series of organic remains. By a laborious process of grinding down and polishing these fragments he succeeded in producing a large number of thin laminae or delicate stone shavings, which he subjected to a careful series of investigations under the most powerful microscopes. He has recently published a book on this subject, containing on thirty two plates more than one hundred

representations of these laminae of meteorites, every one of which contains different forms and figures, which Dr. Hahn positively identifies not as mineralogical but as organic, and, in fact, as zoological formations belonging to the different classes of sponges, corals, and crinoids. These pictures, which have been reproduced from the original laminae by photography, without any alterations or additions by a draftsman, must cause great surprise to every geologist and paleontologist, who will at once recognize the structure of well-known coral types on several of the plates. The majority of the meteorites containing these forms are part of the celebrated great meteoric fall of Knyahinya in Hungary, which took place on the 9th of June, 1866.

Dr. Hahn, having sent the whole of his original [cuts] shavings, comprising over three hundred specimens, to the noted zoologist Dr. Weinland for examination and determination, the latter has also published a report on this subject in a German scientific journal, and the present article is based on the statements of these two scientists.

The result of a thorough examination of these specimens, with a complete comparison of his own great collection of corals, fully convinced Dr. Weinland that a large number of the formations in question are without doubt remains of coral belonging to the class of the *favosites*, which on the earth are now to be found only in a fossil state, and then only in the oldest, or paleolithic, stratum.

The terrestrial polypous branches of these *favosites* are composed of polypary tubes running parallel to each other. At the top, where the cups (calyx) open and the then living polyps are sitting, the coral branches of the favosite present a more or less regular network, composed of the walls of the different polyps. Besides, this class is especially

characterized by the cross-partitions in the polypous tubes, as well as by the regular rows of minute holes in these walls, which facilitate the connection between each tube with its neighbors.

Now these polyparies (i. e., bundles of tubes entirely similar to those of the earth's *favosites*) can be found in a large number of Dr. Hahn's meteoric laminae, which originated not from a single but from many separate falls of meteorites. Many of them show with perfect clearness the very same cross-partitions and rows of holes at fixed intervals from each other with so much regularity that it is impossible to admit a coincidence. At the same time, no geologist would attempt to offer a mineralogical determination of these minute structures, partitions, and holes, which are already visible under a microscope magnifying two hundred times, but which may even still be traced up to four hundred and eighty times. It is, therefore, perfectly evident that the objects in question are organic remains, and, in fact, those of a class nearly related to our favorite corals.

Unfortunately, most of the laminae are cut parallel to the length of the polypary tubes, because the huge meteoric stones had to be broken up in order to obtain these cuts, whereby they generally split with the length of the coral-branches. Only one remarkably fine laminae, a perfect unicorn, in the whole collection, and also a part of the fall at Knyahinya, affords a full view from the top of the branch into the calyx of the polyparium and into the arrangement of the cups themselves. This specimen alone must bring conviction to every connoisseur of corals. It is represented on Plate X, Figs. 3 and 4, of Dr. Hahn's book, but the yellowish tint of the laminae prevented the object from coming out as clearly on the photograph as it can be seen on the original under a good microscope.

This object is evidently a complete small coral-branch of roundish shape, which stands with a broad base on another coral formation. The whole network of the calyx can here be seen with the greatest clearness. The cups are quite dark in the center, being filled with a black substance; then follows a whitish filling around this dark center, and then, plainly visible, the wall of each tube always as a sharply defined line, which is already visible with a low magnifying power. This network of lines, separating the single cups from each other, presents a variety of sizes and forms of the calyx, which, just like those of a great number of our corals, and especially of those of the Devonian *favosites* polymorphous, are very irregular, often larger or smaller than the average, with rounded or straight side-walls or smaller cups formed by the partition of one larger one. This extraterrestrial coral has been named by Dr. Weinland, in honor of its discoverer, *Hahnia meteoritica*. All these coral structures in the meteorites are petrified, having taken the form of silicates of magnesia.

Another very notable peculiarity of these extraterrestrial corals is their extreme smallness, for, in comparison with those of the earth's fauna, they represent a veritable pygmy animal kingdom. The just-described coral-branch of *Hahnia meteoritica* is but a white dot in the meteoric cut, barely visible to the naked eye. Its greatest diameter measures but 0.90 millimeter, and the single cups average but 0.05 millimeter. These are dimensions quite unknown in any terrestrial corals, where a calyx of one millimeter diameter may already be called small. But we must still be prepared for yet quite different things in these extraterrestrial organisms, for it is very possible that there may yet be found formations for which we can absolutely find no place in our systems of zoology. In fact, it is rather startling that the above-mentioned structures present forms of coral so nearly related to those of the earth, and we must, therefore, accept this fact as

important evidence that an organic evolution of great similarity to that on our own Earth has taken place on whatever planet from which these meteorites originated.

Besides corals, Dr. Weinland has also succeeded in finding a number of other organic remains in Dr. Hahn's specimens. The material for this investigation was very large, for the greater part of the specimens have evidently been fused together from organic fragments. This is especially the case with the great meteoric stone of Knyahinya, which weighed over two hundred pounds. Well-preserved forms, however, are scarce, for the meteoric material was principally composed of fragments and detritus, which greatly resembled, for instance, the youngest marine chalk in the Gulf of Mexico. But, after comparing a great number of laminae and attaining some practice in this work, Dr. Weinland succeeded in restoring certain often-repeated formations. The sponges especially were highly developed, and of these Dr. Weinland succeeded in actually determining three different genera. Of one characteristic bluish sponge, which occurred in several favorable cuts both as young and old specimens, he was able to make a drawing of its interior construction as easily as from a living specimen. He also thinks that he has discovered vegetation traces; at least, a remarkable, arched form, divided into two halves by a cross-partition, and measuring 0.8 millimeter in diameter, greatly resembles the shield-algae (*cocconeis*). But he is yet unable to decide whether the formations, claimed by Dr. Hahn as crinoids, really belong to this class, for some of them are certainly *Spongia*.

So far, not a single trace has been found of higher animal forms (*mollusca*, *arthrozoa*), but all the discovered organisms evidently indicate the primary formation of the celestial body from which they came. Then, again, this entire extraterrestrial fauna hitherto discovered, which already comprises about fifty different species, and which

originates from different meteoric falls, even from some during the last century, conveys the impression that it doubtlessly once formed part of a single extraterrestrial-celestial body with a unique creation, which in by-gone ages seems to have been overtaken by a grand catastrophe, during which it was broken up into fragments.

Perhaps some readers of this article will ask why this remarkable discovery has not been made before, considering the great number of meteorites already collected in our mineralogical collections and the considerable number of scientists who have investigated them.¹ Different circumstances will explain this question. Firstly, meteoric stones are always rare and costly objects, which are not easily sacrificed by their possessors, so that hitherto but very few of them have been broken up in order to obtain laminae suitable for microscopic investigation. Then, again, the latter have only been manufactured in limited numbers, so that the probability of discovering a favorable object in them could consequently be but very small. Dr. Hahn, however, has made extraordinary sacrifices, both in time and money, to obtain his specimens, of which he now possesses no less than six hundred. It must also be mentioned that hitherto the investigations of a few specimens have been made with a magnifying-glass only, and but seldom with powerful microscopes, such as Dr. Hahn employs.

Besides thus affording positive proof of the fact that other worlds are or have been inhabited by organic beings, this important discovery has also solved another interesting

¹ Probably the largest collection of meteoric stones is in the possession of Mr. Shephard, of New Haven, Connecticut. It contains over 500 specimens, weighing together 1,200 pounds. The largest fragment, which weighs 436 pounds, comes from Colorado, and the smallest, of half an ounce only, from Otsego County, New York. The largest complete stone (56 pounds) fell in Muskingum County, Ohio, the smallest (less than 50 grams) in Sweden. The specimens forming this collection have been brought together from all parts of the world, and belong to meteoric falls during several centuries. The first specimen in the catalog fell on the 7th of November, 1492, in Alsace, and the last on the 12th of February, 1875, in Iowa.

problem, which has long perplexed the scientific world. By the newest theory of the celebrated astronomer Schiaparelli regarding meteorites, the latter were supposed to emanate from incandescent comets and their tails. Now all the petrified organisms discovered by Dr. Hahn have been proved to belong to the sub-aqueous classes of animals, and indeed have lived in water which never froze entirely, and for which we would certainly have to look in vain in comets, which are now generally admitted to be in a state of active combustion.

This affords but another proof of the transcendent importance of this new and great discovery, the general results of which we have now placed before the readers of this journal.